SCA2 protein, said method comprising:

contacting a sample containing nucleic acids with a probe comprising at least 15 nucleotides capable of specifically hybridizing with a sequence of nucleic acids of the nucleotide sequence set forth in SEQ ID NO:2 or SEQ ID NO:4, wherein said probe is labeled with a detectable marker, and wherein said contacting is effected under high stringency hybridization conditions, and identifying compounds which hybridize thereto.

Please add the following new claims:

44. (NEW) A method for identifying nucleic acids encoding a human SCA2 protein, said method comprising:

contacting a sample containing nucleic acids with a probe comprising at least 15 nucleotides capable of specifically hybridizing with a sequence of nucleic acids of the nucleotide sequence set forth in SEQ ID NO:2 or SEQ ID NO:4, and wherein said probe is labeled with a detectable marker, wherein said contacting is effected under high stringency hybridization conditions; and

identifying compounds which hybridize thereto, wherein the nucleic acid encoding a human SCA2 protein comprises a mutation at the SCA2 locus in 12q24.1.

45. (NEW) The method of claim 44 wherein the mutation comprises an expanded CAG repeat.

46. (NEW) The method of claim 45 wherein the expanded CAG repeat comprises between about 36 CAG repeats and about 52 CAG repeats.

47. (NEW) The method of claim 45 wherein the expanded CAG repeat comprises between about 38 CAG repeats and about 61 CAG repeats.

48. (NEW) A method for identifying nucleic acids encoding a human SCA2 protein, said method comprising:

contacting a sample containing nucleic acids with a probe comprising at least 15

nucleotides capable of specifically hybridizing with a sequence of nucleic acids of the nucleotide sequence set forth at nucleotides 163-657 of SEQ ID NO:2 or nucleotides 724-4098 of SEQ ID NO:2 and wherein said probe is labeled with a detectable marker, wherein said contacting is effected under high stringency hybridization conditions, and identifying compounds which hybridize thereto.

49. (NEW) The method of claim 48 wherein the nucleic acid comprises an expanded CAG repeat.

50. (NEW) The method of claim 49 wherein the expanded CAG repeat comprises between about 36 CAG repeats and about 52 CAG repeats.

51. (NEW) The method of claim 49 wherein the expanded CAG repeat comprises between about 38 CAG repeats and about 61 CAG repeats.

52. (NEW) A method for identifying nucleic acids encoding a human SCA2 protein, said method comprising:

contacting a sample containing nucleic acids with a probe comprising at least 15 nucleotides capable of specifically hybridizing with a sequence of nucleic acids of the nucleotide sequence set forth at nucleotides 163-657 of SEQ ID NO:2 or nucleotides 724-4098 of SEQ ID NO:2 and wherein said probe is labeled with a detectable marker, wherein said contacting is effected under high stringency hybridization conditions; and

identifying compounds which hybridize thereto, wherein the nucleic acid encoding a human SCA2 protein comprises a mutation at the SCA2 locus in 12q24.1.

53. (NEW) The method of claim 52 wherein the mutation comprises an expanded CAG repeat.

54. (NEW) The method of claim 53 wherein the expanded CAG repeat comprises between about 36 CAG repeats and about 52 CAG repeats.

55. (NEW) The method of claim 53 wherein the expanded CAG repeat comprises between about 38 CAG repeats and about 61 CAG repeats.

56. (NEW) A method for identifying nucleic acids encoding a SCA2 protein, said method comprising:

contacting a sample comprising genomic DNA with a first diagnostic nucleic acid and a second diagnostic nucleic acid, wherein the first diagnostic nucleic acid is derived from nucleotides 163-657 and the second diagnostic nucleic acid is derived from nucleotides 724-4098;

amplifying the genomic DNA under conditions to form a detectable amplification product; and

detecting the amplification product, wherein the presence of the amplification product identifies the presence of nucleic acids encoding a SCA2 protein.

57. (New) The method of claim 56 wherein the first diagnotic nucleic acid is SCA2-A (SEQ ID NO:6) and the second diagnostic nucleic acid is SCA2-B (SEQ ID NO:7).

58. (New) A method for identifying nucleic acids encoding an SCA2 protein, said method comprising:

contacting nucleic acid obtained from subject primers that amplify at least a nucleic acid fragment of SEQ ID NO:2 containing nucleotides 658-723 of SEQ ID NO:2, under conditions suitable to form a detectable amplification product; and

detecting an amplification product, wherein the presence of the amplification product identifies the presence of nucleic acids encoding an SCA2 protein.

REMARKS

Claims 1-36 and 38-43 having been canceled, claim 37 having been amended, and claims 44-58 having been added, the pending claims are claims 37 and 44-58.

The amendment to the specification at page 1, after the title, was made to add the cross-reference to related applications data. The second amendment to the specification at page 1